

FLIGHT

The
AIRCRAFT
ENGINEER
&
AIRSHIPS

First Aero Weekly in the World
Founder and Editor: STANLEY SPOONER

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EDITORIAL COMMENT



ELSEWHERE in this issue we publish in full the report of the Court of Enquiry appointed by the Air Council to investigate the circumstances which led to the loss of "R. 38" on August 24, 1921. Certain criticisms of the Admiralty are made in the Air Council's statement on the report, and the Admiralty are conducting a full investigation the results of which are to be published in due course.

Loss of "R. 38."

Also the Aeronautical Research Committee has already begun an investigation into such points as are not covered by the report of the Court of Enquiry.

Thus at the present moment all that can be definitely stated is that the sequence of events was as indicated in the report. The question of why the girders broke and the facts relating to the design and construction of the airship still have to be settled, and we prefer to refrain from further comment on that side of the affair until such time as the Aeronautical Research Committee and the Admiralty have had an opportunity of making their reports.

In the meantime, the Court of Enquiry appears to have come to the conclusion that, once the airship was broken, the fire was caused by a spark from electric leads which became fractured in the immediate vicinity of a similar fracture in the petrol mains. Thus those who have long held—and among them are the majority of airship experts—that the greatest fire danger is from the petrol and not from the hydrogen, appear to have been vindicated. There has been a good deal of talk about helium, and the assertion has been made that, unless this or a similar non-inflammable gas becomes available, airships will always suffer from the danger of fire. In this case the fire was not caused by the hydrogen, but by the petrol, and it is very much open to doubt whether had no petrol main broken, the fire would have started when the ship broke. The report appears to us to bear out those who hold that in order to make safe airship travel, rather than hunt for an elusive non-inflammable gas which may elude us for years, we should commence really serious research into the possibilities of using a heavy oil engine in place of the petrol engine. The Diesel or semi-Diesel type has much to recommend it, and many experienced and qualified engineers hold that the type is imme-

DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:

- Oct. 13 Lecture, "A Comparison of Different Types of Aerofoils," by T. A. Kirkup, before R.Ae.S.
- Oct. 20 Lecture, "The Langley Machine and the Hammondsport Trials," by Griffith Brewer, before R.Ae.S.
- Oct. 22-30 Aero Exhibition, Prague
- Nov. 3 Pulitzer Trophy Race.
- Nov. 3 Lecture, "Manœuvres of Getting Off and Landing," by Sq.-Ldr. R. M. Hill, before R.Ae.S.
- Nov. 12-27 Paris Aero Salon
- Nov. 15-26 International Air Navigation Congress (Paris)
- Nov. 17 Lecture, "Requirements and Difficulties of Air Transport," by Col. F. Searle, before R.Ae.S.
- Dec. 1 Lecture, "Design of a Commercial Aeroplane," by Capt. G. de Havilland, before R.Ae.S.
- Dec. 15 Lecture, "Development of the Fighting Aeroplane," by Capt. F. M. Green, before R.Ae.S.
- 1922.
- Jan. 5 Lecture, "Specialised Aircraft," by Wing-Com. W. D. Beatty, before R.Ae.S.
- Jan. 19 Lecture, "Aeroplane Installation," by Brig.-Gen. R. K. Bagnall-Wild, before R.Ae.S.

diately applicable in a slightly modified form to airship work. The use of heavy oil and economy in working are two of its main advantages. Against that must be placed the question of the weight of the engine itself. In the Diesel engine, as applied to work on the ground, the weight is high, but competent engineers are convinced that the weight can be reduced to somewhere in the neighbourhood of 7 lbs./h.p., which is certainly not a prohibitive figure considering the many advantages which the type possesses.

Imperial Airship Routes

The loss of "R.38" has in no way damped the enthusiasm of Mr. Hughes, the Australian Premier, for the ideal of a rapid service of communications between the various parts of the Empire by means of airships. He has lost no time since his return to Melbourne in laying before the Commonwealth Parliament his ideas and proposals for the opening up of airship services between England and Australia. He submitted a proposal, upon the lines suggested in *FLIGHT* on August 25 last, for an experimental system for two years, to cost £250,000. This would be possible, he said, by utilising four airships from England, with mooring masts at Cairo, Poona or Karachi, Singapore and Australia. The scheme would be experimental, with a view to demonstrating the practicability of air communications over long distances. He asked the House not to regard the disaster to "R.38" as discrediting air communications. Terrible as that disaster had been, it had revealed things that should be known for the sake of future security of aerial services.

To guarantee a fortnightly service, said the Premier, ten or twelve airships would be required, and it would be better to test the service by initial experiment on a comparatively small scale. He believed it would be possible to cover the distance between England and Australia in from eight to ten days, though experts were doubtful about the former time.

Mr. Hughes' declaration has been warmly welcomed here by all who believe in the possibilities of the airship as a means of speeding up intercommunication between the integral parts of the Empire. These have lately been living in the gloom of despair at ever getting anything done, and the encouragement extended by Mr. Hughes' statement was as badly needed as it was welcome. At the time of writing we are not aware of the reception of the outline proposal by the Commonwealth Parliament, so it is early yet to regard the experimental services as coming near to accomplished facts.

We do not want to throw any cold douches on the hopes of those who look forward to the establishment of the suggested services, but we must point out that £250,000 spread over two years is a very small sum to play with when things are as they are. A year ago, when we had an airship fleet in being, it was different, and there would have been no particular difficulty in commissioning the necessary four ships at a comparatively small outlay. But even supposing everything to go smoothly with the initial part of the scheme and the money to be voted, where are we to find the ships now? We certainly have four ships, but they are very much on paper. "R.36" and "R.33" are not in the best of condition for commissioning, and the two surrendered Zeppelins are utterly useless until

they have been provided with new gasbags and have undergone a lengthy and expensive process of re-conditioning. However, we will not preach pessimism.

The point now is that a concrete move has at last been made towards instituting an Empire airship service. We have never expected the States concerned to find all the money for such services, so we regard the first suggested outlay as by way of being encouragement to private enterprise to come forward and set things going. We begin at last to think that we shall yet live to see regular airship services running all over the Empire.

The Next War

Gen. Brancker seems to have suffered at the hands of the reporters, who made him say in the course of a recent lecture that "in five years' time instinct tells me there will be another war. There will be no declaration. It will start by a sudden aerial attack." What he actually did say was that war might come on us again, possibly even in five years' time. He explains that he mentioned the period of five years instinctively, as being the least possible time in which we might have to face war.

It really matters very little which way the matter was put. In either case we think Gen. Brancker has given people something to think about, since he is unquestionably right in his prognostication of how the next great war will begin—if it begins at all. That is to say, if the League of Nations and the Washington Disarmament Conference do not succeed in the meantime in discovering some less crude method of settling international disputes than the appeal to arms.

For ourselves, we are frankly sceptical of anything of the kind. So long as human nature remains what it is and so long as the world is divided into nations, so long will there be wars and rumours of wars. And the best manner of inviting war is to be unprepared to resist aggression. This last may be accepted as an elementary proposition, and if we so accept it, the next we have to do is to enquire whether we are in such a state of preparedness as to be able to resist attack if it should come, or, better still, if we are so armed at all points that the potential enemy will be deterred from making an aggressive move.

Gen. Brancker says—as a great many have said before—that there will be no declaration of war. The first that will be known of war will be when the great aerial attack develops. This, we agree, is beyond question. Are we, then, laying our plans in such a manner as to deter the possible aggressor? The answer, unfortunately, is most distinctly in the negative. We are not. While other nations are encouraging civil aviation and building up a powerful reserve to their fighting air services, we have reduced our Air Force to a mere nucleus and have practically no reserve whatever. Nor are there any indications that the Government appreciates the position of hopeless inferiority into which we are falling.

Once again we see the safety of the Empire being imperilled by a set of jerrymandering politicians, who seem to be able to find the money for all and every vote-catching scheme, but when they are asked to provide for the elementary needs of Imperial defence allege that there is no money in the till and in any case there will never be another great war!



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LONDON-PARIS FROM THE AIR, AS SEEN FROM A HANDLEY PAGE MACHINE :
No. 10.—Dulwich and Tulse Hill.

THE WATERMAN OX-5 RACING MONOPLANE

A NEAT little parasol monoplane was constructed by the Waterman Aircraft Mfg. Co., of Venice, Cal., U.S.A., for the Mercury Aviation Co., and we are indebted to our American contemporary, *Aerial Age*, for the following brief particulars of this machine. It was designed and built purely for racing purposes, and three factors only were taken into consideration:—maximum speed with a stock Curtiss OX-5 engine, good visibility, and manœuvrability on sharp turns. Such features as smart appearance, low landing speed, and fast climb have, therefore, been of secondary importance. In order completely to streamline the Curtiss engine it was

basswood and birch. The *fuselage* terminates at the rudder post with a square cross section, 12 ins. by 12 ins., behind which is attached an aluminium fairing 16 ins. long. The *fuselage* complete with tanks, seat, controls, instruments, etc., weighs 224 lbs.

The main planes, which have neither dihedral nor sweepback, are built up in standard web and strip construction with box spars. They are hinged to a tubular pylon at their roots, and are supported at a point 6 ft. from the root by tubular struts from the lower *longerons* of the *fuselage*. Single drift and anti-drift Hartshorne wires are used on each side, which take practically all the tension load, while the struts merely take the compression load. The box spars are unusually heavy, especially at their point of intersection with the overhang struts.

Both the rudder and elevator controls are enclosed in the fairing at the rear of the *fuselage*, and are operated through a system of staggered cranks and cables. External control wires and masts in the tail units are thus eliminated. The *ailerons* are operated by a system of rods and bell cranks, all of which are enclosed, except for a short horn on each *aileron*. The leading edges of all control surfaces are rounded and set into recesses in such a way that there is no gap between the surface and the member to which it is hinged. The complete wings weigh 115 lbs., and the tail surfaces, 35 lbs.

The 90 h.p. Curtiss is mounted in the nose of the *fuselage*, and is completely cowled in. A gravity fuel system with a 20-in. head eliminates the bother of the usual pressure systems. A large door in the rear of the aluminium fire wall gives access to the carburettor for adjustment and cleaning, and a small window in the side of the *fuselage* permits the inspection of the oil gauge in the side of the engine crank-case. The cooling system consists of one radiator placed on the starboard side of the *fuselage*, about 9 ins. aft of the rear cylinder. In so placing the radiator the pressure caused by its being off centre compensates for the airscrew torque, and does away with the usual right rudder setting when flying a straight course. A 7 ft. 9 in. diameter tractor screw, with 7 ft. pitch, is employed.

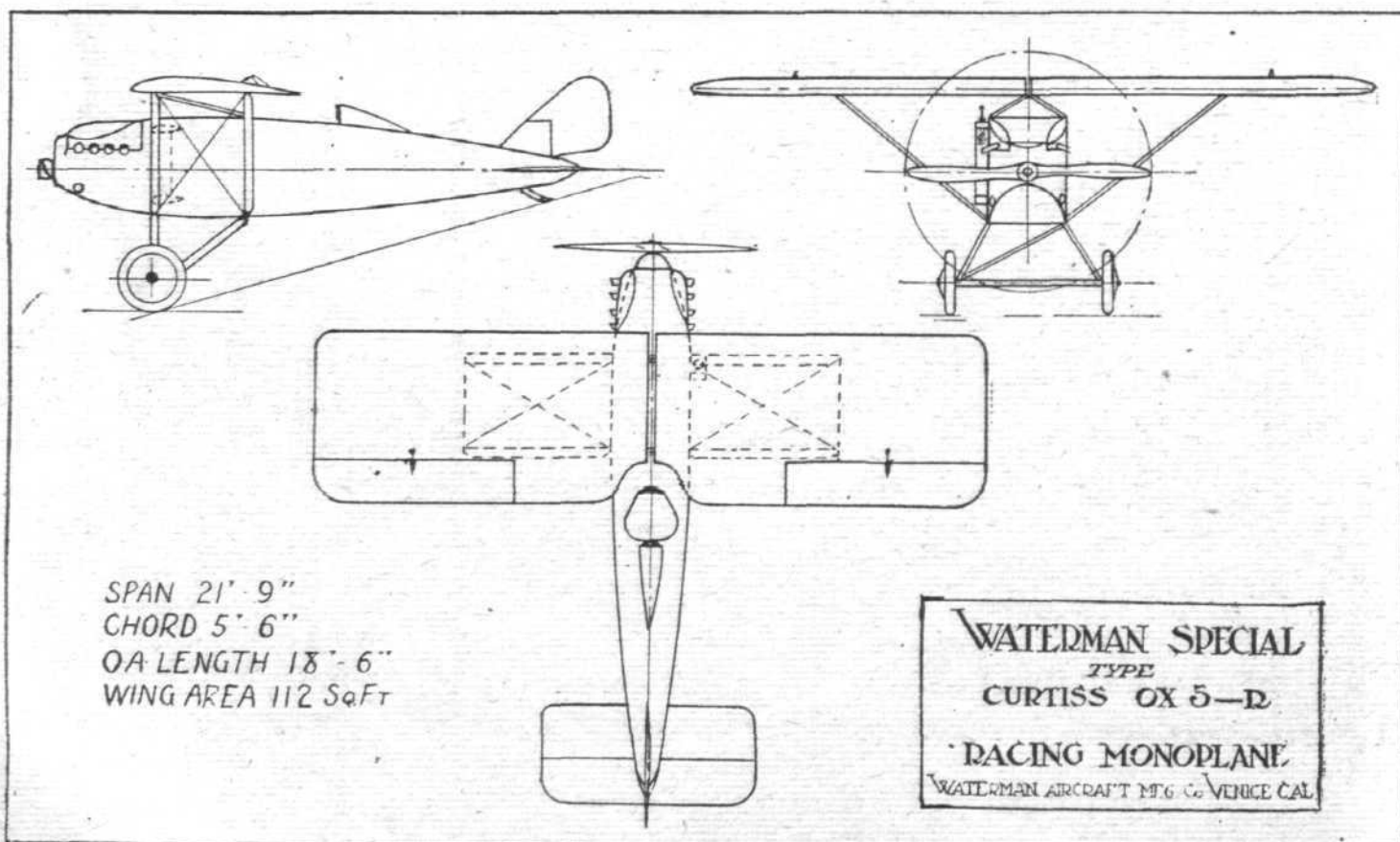
Steel tube is used throughout the construction of the under-carriage, which is rigid. The struts are hinged to suitable fittings at the bottom *longerons*. As there are no shock absorbers, an exceedingly light and simple gear has been obtained, but not one which would be highly recommended for landing on rough ground. Cross wires have been



THE WATERMAN OX-5 RACING MONOPLANE :
Three-quarter front view.

necessary to build a *fuselage* of somewhat large proportions, but this, however, has been found to be a desirable feature, as the large keel surface area proved to be indispensable in making sharp turns at high speed.

The *fuselage* is of the orthodox *longeron* bulkhead and plywood construction. There are six bulkheads of fir varying from $\frac{5}{8}$ in. 6-ply to $\frac{3}{4}$ in. 9-ply. These are spaced more or less evenly from the front of the engine bearers to the rudder post. The maximum cross section of the *fuselage* occurs just aft of the engine, and is 31 ins. by 39 $\frac{1}{2}$ ins. The *longerons* are $1\frac{1}{2}$ in. square at the point of maximum depth, tapering to $\frac{7}{8}$ in. at the stern. The veneer facing is 3-ply, $\frac{3}{16}$ in.



THE WATERMAN OX-5 RACING MONOPLANE : General arrangement drawings.

replaced by a diagonal tube carrying both tension and compression. The whole gear is streamlined with wooden fairing wrapped with tape and doped. The wheels are 26 ins. by 3 ins. and the axle is $1\frac{1}{2}$ in. in diam.

Under the name of the "Mercury Gosling," and looking very smart painted "Mercury" red, this little machine put up an excellent performance at the Los Angeles Air Tournament held on July 16-17 last.

The following are the principal characteristics of this machine:—

Span	21 ft. 9 ins.
Chord	5 ft. 6 ins.
Overall length	18 ft. 6 ins.

Height	7 ft. 8 ins.
Wing curves	U.S.A. 15.
Area of main planes	112 sq. ft.
Area of ailerons	16 sq. ft.
Area of tail plane	12 sq. ft.
Area of elevators	10 sq. ft.
Area of fin	$1\frac{1}{2}$ sq. ft.
Area of rudder	5 sq. ft.
Weight empty	885 lbs.
Weight fully laden	1,130 lbs.
Weight/sq. ft.	11.1 lbs.
Weight/h.p.	12.5 lbs.
Speed range	60-130 m.p.h.

"R. 38" COURT OF ENQUIRY

THE Air Ministry, in publishing the appended report of the Court of Enquiry into the circumstances occasioning the loss of H.M. Airship "R.38," on August 24, 1921, desire to make the following statement:—

The Air Council consider that reasonable certainty has been reached as to what actually happened when the accident took place and as to the sequence of events. They are, however, of the opinion that judgment must be suspended on the further points raised by the report until the work of investigation by the Aeronautical Research Committee, which has already begun, is concluded.

Report.—The terms of reference of the Court of Enquiry are reproduced below:—

"By command of the Air Council, a Court of Enquiry, composed as mentioned below, will assemble at R.A.F. Airship Base, Howden, at 10.00 hours on Saturday, August 27, 1921, to enquire into the circumstances occasioning the loss of H.M. Airship 'R.38' on August 24, 1921, and to express an opinion as to possible causes of the loss."

President.—Air Vice-Marshal Sir J. M. Salmond, K.C.B., C.M.G., C.V.O., D.S.O., R.A.F.

Members.—Air-Commodore F. R. Scarlett, C.B., D.S.O.; Group-Capt. A. M. Longmore, D.S.O.; Group-Capt. A. B. Burdett, D.S.O.; Wing-Comdr. T. R. Cave-Browne-Cave, C.B.E.; Squad-Leader D. Harries, A.F.C.; Squad-Leader R. B. B. Colmore, O.B.E.; A. W. Johns, Esq., C.B.E., R.C.N.C., Assistant Director of Naval Construction, Admiralty.

In Attendance.—Comdr. Horace T. Dyer, United States Navy.

The Court having considered the evidence and the terms of reference, have reached the following conclusions, but wish to point out that owing to the illness of the Captain of the airship (Flight-Lieut. A. H. Wann, R.A.F.) they have been unable to procure his evidence. It is not anticipated, however, that the opinion given below will be modified to any appreciable extent:—

(a) That on August 24, 1921, at or about 7.38 hours, H.M. Airship "R.38," while flying at approximately 1,200 ft. over the Humber in the neighbourhood of Hull, broke in two parts, due to failure of the structure in rear of the after-engine cars when being subjected to control tests.

(b) That immediately after the fracture a fire broke out in the forward portion, and this was mainly responsible for the large loss of life.

(c) That these control tests were being undertaken with a view to determining the airworthiness of the ship.

The sequence of the events as disclosed by evidence is as follows:—

That the airship, having completed some 30 hours' trial, including 15 minutes at full speed (60 knots), was flying at a height of about 1,200 ft. She was carrying out rudder and elevator tests at a speed of 45 to 50 knots. Almost extreme helm with a quick reversal was being used, which brought a heavy force on the after portion of the hull, due to the swing of the stern.

During this manoeuvre the structure failed between frames 9 and 10, the first indication of which to ground observation was a slackness of the fabric at this point.

The ship then broke into two portions. The forward portion caught fire at the fracture, at the moment of or shortly after separation.

The fire probably originated in a spark from the electric leads, which became fractured at a point in the immediate vicinity of a similar fracture in the petrol mains. As all sources of electrical energy were situated in the forward portion only, the rear portion was not affected, as electric leads in the latter portion became dead immediately the fracture took place.

The fire in the forward portion spread rapidly, due to the presence of escaping petrol in the keel. An explosion followed, which led to the collapse of the structure and the ignition of the liberated hydrogen gas. A second explosion took place when the forward portion reached the water. Meanwhile the after portion descended comparatively slowly, but did not catch fire; four of the five survivors were in this portion, and were rescued uninjured.

The Court wish to bring the following points to notice:—

1. That H.M. Airship "R.38" was designed in August, 1918, in the Department of Airship Production, Admiralty, to meet requirements which appear to the Court to be greatly in advance of those of previous British airships.

That the requirements as to maximum height and speed, together with the limits in length imposed by the only available construction sheds, necessitated the utmost economy in hull weights and materials. Many new features were introduced in the design, and it appears evident that in some cases there was a lack of vital aerodynamical information as to the effect of these modifications on the strength of the structure.

That the first frames of the ship were completed in October, 1919, at Cardington by Messrs. Short Bros., and in the same month the Airship Department was transferred from the Admiralty to the Air Ministry. Cardington was taken over from Messrs. Short Bros. in April, 1920, by the Air Ministry, and became the Royal Airship Works.

2. That having regard to the great differences in the requirements between H.M. Airship "R.38" and previous British airships, the design should have been examined and discussed by an official and competent Committee before actual construction was commenced. There is no evidence to show that this has been done, although opportunity arose after the Armistice when information as to the details of ships built elsewhere became available.

3. That the system by which both the construction of the ship and the inspection of the work are centred in one head, as was the case at the Royal Airship Works, Cardington, is unsound.

4. That although there can be no doubt that efforts were made towards the end to complete the ship in the shortest possible time, there is no evidence that the work on the hull structure suffered.

5. That one parachute was provided for every person on board.

That the total complement numbered 49.

No survivor owed his escape to a parachute, though evidence shows that at least one parachute descended with two men below it, but they were not amongst the survivors.

The general break-up and rapid spread of the fire in the keel prevented the more successful use of these appliances.

6. That no bombs or other high explosives were being carried.

7. That the weather during the whole flight was calm.

The Secretary of the Admiralty communicates the following:—

"With reference to the Report of the Court of Enquiry into the circumstances occasioning the loss of H.M. Airship 'R.38' and the Air Council's statement thereon, the Admiralty are conducting a full investigation into the history of the design of the airship and of the initial stages of its construction up to October, 1919, when responsibility for the design and construction of airships was transferred to the Air Ministry, and the result of this investigation will be published in due course."

FIRST STANDARDISED AERO ENGINE MOUNTING

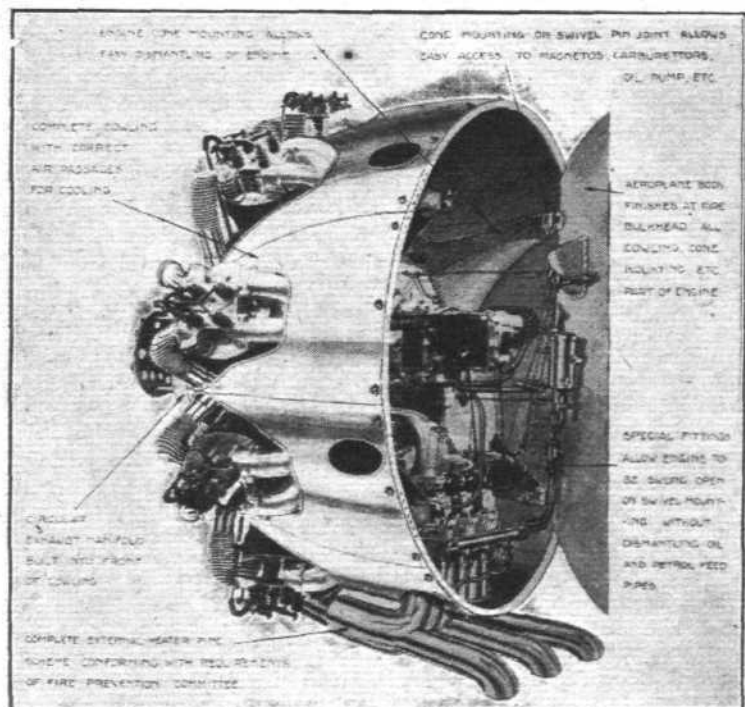
Swivelling Mount for Bristol "Jupiter"

ONE of the most serious items in the economical running of an air line is the question of the accessibility of the engine. The power plant, and especially its accessories, is the part of a machine requiring most attention, and it is usually the part most difficult to get at. An exception is the rotary overhung engine, but as this is a type now relatively rarely seen on commercial machines, it scarcely need be considered in a general review of air-line conditions. During the last year or two a serious effort has been made to remedy this state of affairs by introducing the unit method of construction, in which the engine and its radiator (if any) are mounted on a framework forming a separate unit. Thus it has become possible to make provision for interchanging the engine units in a fairly short space of time. There remains still, however, the question of standardisation. It is probably true to say

that a considerable amount of the trouble with engine installation has been due to a lack of co-operation between the engine builder and the aeroplane constructor. The latter designed the engine mounting to suit his own tastes, and it is to be feared that these did not always give the engine maker a fair chance. Obviously the maker of the engines should know better than anybody else can the type of mounting and installation which suits his engine best. He alone knows the stresses set up and the particular anti-vibration precautions necessary to get the best results. Generally it has been thought inadvisable to provide a standardised mounting for any given engine, as this might hamper progress in aeroplane design. While we admit that there is a good deal of reason in this claim, we do think that too much has been made of it, and that an unnecessary multiplicity of mountings and installations has prevailed. It is therefore with satisfaction that we are able to record this week the first step towards standardisation of mounting for at any rate one engine.

The Bristol Aeroplane Co., Ltd., who are the makers of the "Jupiter" radial engines, have designed a standardised mounting for this type of engine. Not only so, but they have gone one step farther, and have produced a swivelling mounting which allows of access to the rear of the engine with magnetos, etc. As will be seen from the accompanying illustration, the engine is enclosed in a cone-shaped cowl, the engine plate being attached to the fuselage by four taper bolts. If it is desired to get at the back of the engine, the whole engine can be swung out, using the bolts on one side as pivots, and having undone the two bolts on the opposite side. The fuel and oil pipes are so arranged that they do not require disconnecting in order to swing out the engine. The engine can be removed from the machine and a fresh one substituted in less than three hours.

The cowl itself is secured to the crank-case of the engine, and the special shape of the air passages are the results of extensive experimental wind tunnel tests, so as to ensure the maximum of cooling with the minimum of resistance. The circular exhaust manifold is built into the front of the cowl, with pipe leading to the exhaust ports. A completely external heater pipe arrangement is provided for heating the incoming air to the carburettors. This arrangement complies with the requirements of the Fire Prevention Committee, and every precaution has been taken to render it impossible for an engine fire to spread. The general arrangement of the mounting is indicated in the illustration, which is, we think, self-explanatory.



Bristol "Jupiter" Engine Mounting.

THE LONDON-CONTINENTAL SERVICES

FLIGHTS BETWEEN OCTOBER 2 AND OCTOBER 8, INCLUSIVE

Route†	No. of flights*	No. of passengers	No. of flights carrying		No. of journeys completed†	Average flying time	Fastest time made by	Type and (in brackets) Number of each type flying
			Mails	Goods				
Croydon-Paris ...	32	118	11	22	30	h. m. 2 46	D.H.4 G-EAWH (2h. 13m.)	B. (3), D.H.4 (1), D.H.18 (2), G. (5), H.P. (4), Sp. (5), V. (1).
Paris-Croydon ...	31	109	11	27	28	2 50	D.H.18 G-EAWO (2h. 7m.)	B. (3), D.H.18 (2), G. (4), H.P. (4), Sp. (5), V. (1).
Croydon-Amsterdam ...	6	4	6	6	5	3 46	Fokker H-NABJ (2h. 55m.)	F. (4).
Amsterdam-Croydon ...	6	7	5	5	6	4 1	Fokker H-NABJ (3h. 50m.)	F. (4).
Totals for week ...	75	238	33	60	69			

* Not including "private" flights.

† Including certain journeys when stops were made *en route*.

‡ Including certain diverted journeys.

Av. = Avro. B. = Breguet. Br. = Bristol. Bt. = B.A.T. D.H.4 = De Havilland 4, D.H.9 (etc.).
F. = Fokker. Fa. = Farman F.50. G. = Goliath Farman. H.P. = Handley Page. M. = Martinsyde. N. = Nieuport.
P. = Potez. R. = Rumpler. Sa. = Salmson. Se. = S.E.5. Sp. = Spad. V. = Vickers Vimy. W. = Westland.

The following is a list of firms running services between London and Paris, Brussels, etc., etc.:—Co. des Grandes Expresses Aériennes; Handley Page Transport, Ltd.; Instone Air Line; Koninklijke Luchtvaart Maatschappij; Messageries Aériennes; Syndicat National pour l'Étude des Transports Aériens; Co. Transaérienne.

NOTICES TO AIRMEN

Norway: Customs Aerodromes, Aerial Corridors, Prohibited Areas

1. Customs Aerodromes.

(a) By the terms of the provisional agreement relating to Air Navigation between Great Britain and Norway, signed on July 15, 1921, all aircraft entering or leaving Norway must land at, or depart from, either Kjeller (land machines) or Horten (seaplanes).

The following particulars of these stations are available:—

(b) **KJELLER**.—Military and Civil Customs Aerodrome.

Position.—Latitude $59^{\circ} 58' N.$, longitude $11^{\circ} 3' E.$ Situated 19 kms. E.N.E. of Christiania, 1 km. N.W. of the small town of Lillestrom.

Description.—The aerodrome is divided by a stream into two sections, the northern section being 400×275 yds. and the southern section 600×400 yds. During the winter one portion of the aerodrome is kept clear of snow, the remainder being left snow-covered for the use of machines fitted with skis.

The aerodrome is normally well drained, but is liable to be flooded when the snow melts. The surface is reported to be not very good.

The altitude of the aerodrome is 340 ft. The surrounding country is generally hilly, but immediately to the east of the aerodrome there is marshy ground. A wind indicator is displayed from the roof of a hangar on each portion of the aerodrome. Flares are available for night landings.

Obstructions.—*Northern section*.—The approach from the north is rendered difficult by the presence of factory buildings, hangars and a hill 200 ft. high. *Southern section*.—East side: telephone wires.

Accommodation, etc.—Hangars are available on each ground. Petrol and oil are available, and there are good repair facilities.

(c) **HORTEN**.—Naval and Civil Customs Seaplane Station.

Position.—Latitude $59^{\circ} 26' N.$, longitude $10^{\circ} 30' E.$ Situated on the western side of Christianiafjord, 56 kms. S.S.W. of Christiania. The station is 2 kms. north of Horten and on the western side of the small peninsula on which stands Karl Johansvaern Dockyard.

Description.—A part of the inner harbour (to the west of the station) which is almost entirely surrounded by low-lying islands, is available for alighting: dimensions (approx.) $1,000 \times 1,000$ yds. Sheltered water will be found in the fjord, near the station, in practically all weathers.

There is a wind indicator on a hangar on the east side of the station.

Night landing arrangements.—There are no permanent arrangements for night landing. Two marine lighthouses in the vicinity form a good guide—one on the island of Basto, 6 kms. S.S.E., and the other on the island of Gulholmen, 5 kms. E. of the station. (See map attached.) For the characteristics of these lights, see Admiralty List of Lights and Time Signals.

Accommodation, etc.—Hangars, repair facilities, petrol and oil are available.

N.B.—Since Horten lies within a prohibited area, it should be noted that it can only be approached by certain corridors, at a maximum height of 200 metres (650 ft. approx.). See para. 3 of this notice and the map attached.

2. Aerial Corridors.

No special corridors have at present been laid down for crossing the Norwegian frontier. Aircraft in doing so, however, should not pass within 5 kms. of a Prohibited Area.

They should moreover, as far as possible, enter Norway east of Faeder Lighthouse (latitude $59^{\circ} 2' N.$, longitude $10^{\circ} 32' E.$) or at Fredrikshald.

The further course over Norwegian territory or territorial waters should, as far as possible, be laid in such a way that the aircraft can be observed from Fulehuk Lighthouse (latitude $50^{\circ} 10' N.$, longitude $10^{\circ} 36' E.$) or from Skiptvet Church, about 30 kms. east of Moss, as well as from the above-mentioned places.

The places mentioned in this paragraph are shown on the attached map.

3. Prohibited Areas

No foreign aircraft may fly over the following areas, or approach their borders, within a distance of five kilometres (except along certain routes determined by the Ministry of Defence) unless notification of the passage of the aircraft is given in advance to the commandant of the district or fortress concerned:—

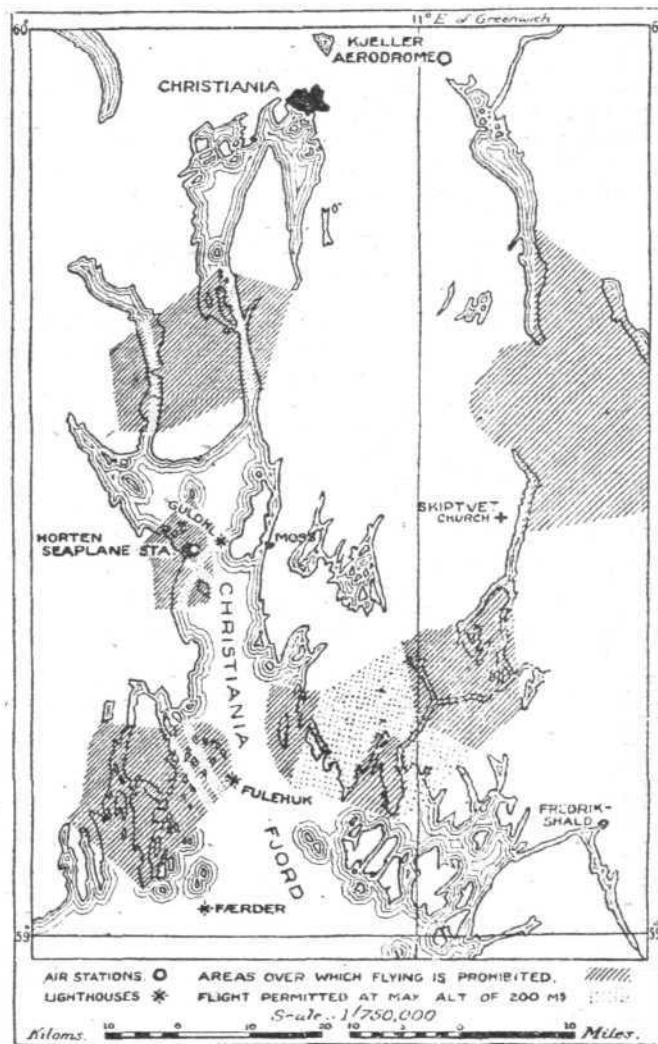
Oscarsborg with Svelvik.—The area bounded by straight lines between the northern point of Lago—the head of the Bundefjord—Hvitsten chapel—Holmsbu chapel—south end

of Blindevannet—north end of Svanevann—northern point of Lago. Within this area flight at a maximum altitude of 200 metres is permitted above the fairway in the middle of the Christianiafjord and the Drammensfjord (Svelvik river).

Horten.—The area between the South end of Basto—Adal Station—railway line as far as Nykirke railway station—south end of Molen up the middle of the fjord to the southern point of Basto. Within this area flight at a maximum altitude of 200 metres, is permitted above the fairway between Horten and Basto.

Tonsberg Fortifications.—Area between the south end of Akersvann—Nottero Church—Torfest—2 kms. E. of Bolaerne to Fulehuk light—south point of Tjomes—Sandefjord—railway line as far as the south end of Akersvann. Within this area flight at a maximum altitude of 200 metres is permitted above Lindholmkaela and Huikjaela.

Rauo.—Area between Sletter south—head of Elingardskilen—S. Missingen—Sletter, in such a way as not to approach within 2 kms. of Rauo (Sletter).



Fredrikstad.—Area between Graesvik Church—Fredrikstad Church—east bank of river Glommen to South point of Oren—Furuholmen—Torgauten light—Graesvik Church. Within this area flight at a maximum altitude of 200 metres is permitted above the channel of the Oster river.

Sarpsborg Fortifications.—Area between the north point of Tuno—Varteig Church—south end of Isesjo—Ullero Church—Glemminge old Church—Solli Chappel—Argardselv—Mingevann—north end of Tuno. Overland flight at a maximum altitude of 200 metres is permitted only in the zone between the districts of Sarpsborg, Fredrikstad and Rauo.

Fossum Fortifications.—Area between Enebakneset—Ogderen—Rodenessjo—Orje—Os Church—Glomme river as far as Morkfoss—Oieren to Enebakneset.

Christiansand Fortifications.—Area between Eidet and Gilsvann—Stromme—north end of Sokkevann—Fidjekilen—south point of Dvergso—Kinn—head of Holskogkilen—Grotjern—Eidet. Within this area, flight at a maximum altitude of 200 metres, either over sea or over land, is permitted to and from the Christiansand air station inside the zone bounded on the west by a line between the head of the Holskogkilen—

East point of Bragdo—to the east of Oddero—air station—west bank of the Torridal river, and bounded on the east by a line between Dvergsnestangen—Oddernes Church—Katterumpem.

Bergen.—(1) Area between Godvik—south point of Storevannet—south point of Bjorndalspollen—lake between Damsgardsfjell and Lovstakken—Lakesevag Church—Byfjorden. (2) Area between Eidsvagsnes—Eidsvag—Eidsvagsvann—Rundemannen—Sverreborg—Byfjorden. Above the fjord, between Godvik and Eidsvagsnes, flight above 200 metres altitude is not permitted; aircraft must, moreover, as far as possible, keep to a line in the middle of the fjord.

Hao (Bergen).—Area between Alversund Church—Isdalsvann—S.E. head of the Hagelsund—S.E. head of Flato Langeland—Maeland Church—Alversund Church. Within this area, flight at a maximum altitude of 200 metres is permitted above the fairway in a line from the S.E. head of the Flato—Maeland Church.

Herlo (Bergen).—Area between Ringholmen light—Saetre—Roslandspollen—Oksen station—Herlogavlen—Ringholmen light.

Agdenes.—Area between north point of Baksten—Fevagbukt—Saete—Arlotsnes—Gronningen—west end of Lillevann—Kvernubukt—north point of Baksten. Within this area flight at a maximum altitude of 200 metres is permitted over the middle of the fjord.

Kongsvinger.—An area with a radius of 7 km. around the town of Kongsvinger.

Stordal (Trondhjem).—The Stordal, between Hegra and Sona stations, and a zone 5 km. wide on either side of the valley.

Verdal. (N. Trondhjem).—The defile between Rotmoen and Stormoen and the adjacent mountain side.

Ofofen.—(a) **Ramsund.**—Area between Tjeldsund to the north, Lavangen—Tarstad road to the east, Ofofen fjord to the south, line between Trollfjell—Jotind—Helligtind to the west. (b) **Sildvik.**—Area between Rombakken to the north, Middags River to the east, Sildviktind—Blaisen—Ytre Sildvikfjell to the south and Orne River to the west.

Note.—Maps showing the boundaries of the prohibited areas mentioned above may be inspected by arrangement with the Controller of Information, Air Ministry. Prohibited areas in the neighbourhood of Christianiafjord are shown on the attached map.

4. Authority.

Provisional agreement relating to Air Navigation between Great Britain and Norway, dated July 15, 1921, for paragraphs 1 (a) and 2; and Norwegian Army Order, No. 23 of 1920, for paragraph 3.

(No. 70 of 1921.)

France : Strasbourg Class "A" Wireless Station

STRASBOURG is added to the table of French class "A" W/T stations given in paragraph 7 of Notice to Airmen No. 61 of 1921.

(No. 77 of 1921.)

France : Ouessant Wireless D.F. Station Temporarily Closed

OWING to alterations which are being effected, Ouessant Wireless Direction Finding Station will be closed until further notice.

(No. 76 of 1921.)

Swedish Aero Show in 1923

ACCORDING to *Svensk Motortidning* it is intended to hold an Aero Show in Göteborg, Sweden, in 1923. The time tentatively fixed for the exhibition is July 7-31. It is stated that the Society of British Aircraft Constructors and the Chambre Syndicale des Industries Aéronautiques have been approached on the subject of participation in the exhibition and have given favourable replies. It is also hoped that Italy, Germany, Czecho-Slovakia, and the United States will participate.

Australian Air Mail Services

THE first of the series of Aerial Mail Services in Australia under control of the Commonwealth will be inaugurated on October 30, or if subsequently fixed by the Minister of Defence not later than November 30. While a limit of £25,000 has been placed by the Government on the total amount of any tender, tenderers are to be given the option of forwarding

Standardisation of Terms Defining Visibility

1. The plain language terms used in meteorological reports to define visibility have been standardised and have the significance shown in the following scale:—

Objects not visible in daylight at a distance of:—

Very dense fog	25 metres or	27 yards.
Dense fog	50	55 ..
Thick fog	100	110 ..
Rather thick fog	200	220 ..
Fog	500	550 ..
Moderate fog	1,000	1,100 ..
Mist or thick haze	4,000	2½ miles.
Slight mist or haze	12,000	7½ ..

2. An object is regarded as being visible if it can be distinguished by the eye, e.g., if the object is a tree and it can be distinguished as a tree, it is considered to be visible.

3. The size of the objects selected for use with the scale given in paragraph 1 depends upon the distance: at two miles the object may be a tree or a house; at ten miles it may be a tower or a large chimney-stack, or a small wood or an outstanding feature on a hill.

4. If the visibility is stated in yards or miles, the statement means that certain objects are visible at the stated distance.

5. At night, the descriptive terms will be used to denote as nearly as possible the same degree of atmospheric obscurity. (No. 82 of 1921.)

List of Notices Operative and Cancelled

1. The following Notices to Airmen are still operative:—

Year 1920.—Nos. 2, 4, 8, 14, 17, 21, 22, 33, 35, 36, 49, 51, 52, 70, 73, 77, 78, 85, 92, 94, 95, 96, 98, 99, 102, 104, 105, 111, 114, 117, 118, 119, 120, 121, 123, 125, 126, 127, 128, 129, 130, 133, 136, 138, 139, 140. Year 1921.—Nos. 3, 4, 6, 8, 9, 10, 11, 12, 13, 15, 18, 20, 21, 23, 28, 29, 31, 36, 37, 38, 40, 41, 42, 46, 47, 48, 52, 54, 55, 57, 59, 61, 64, 65, 66, 67, 68, 69, 70, 71, 72, 74, 76, 77, 78, 79, 80, 81.

2. The following Notices are not now operative and are cancelled:—Year 1920.—Nos. 1, 3, 5, 6, 7, 9, 10, 11, 12, 13, 15, 16, 18, 19, 20, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 34, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 50, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 71, 72, 74, 75, 76, 79, 80, 81, 82, 83, 84, 86, 87, 88, 89, 90, 91, 93, 97, 100, 101, 103, 106, 107, 108, 109, 110, 112, 113, 115, 116, 122, 124, 131, 132, 134, 135, 137, 141. Year 1921.—1, 2, 5, 7, 14, 16, 17, 19, 22, 24, 25, 26, 27, 30, 32, 33, 34, 35, 39, 43, 44, 45, 49, 50, 51, 53, 56, 58, 60, 62, 63, 73, 75.

NOTICE TO GROUND ENGINEERS

De Havilland 4 and 4a Aircraft : Fuselage Wiring Plates

1. The attention of ground engineers is directed to the fuselage wiring plates (Part No. 10653) taking the fuselage cross bracing behind the engine and to the washer plates (Part No. 10654) on the other side of the longerons in D.H.4 and 4A aircraft, instances having occurred in which, after a heavy landing, the wiring plates have pulled away from and the washer plates bedded into the longerons, with consequent damage to these members.

2. Close and frequent inspection of the wiring plates, washer plates, and longerons should be made, especially after a bad landing.

3. Conditions may be improved by replacing the washer plate (Part No. 10654) by a triangular washer plate of increased size and thickness, viz., 10 G. Steel or duralumin plate, measuring 9 ins. in length (along longeron) and 3 ins. in overall width. (No. 11 of 1921.)

proposals to maintain a greater or less number of trips than is provided in the conditions-contract. Tenderers must name two guarantees to the amount of £5,000 for safety of mails and fulfilment of contract. Tenderers must specify the class of machines, and numbers proposed to be provided, with their speed, radius, petrol consumption, carrying capacity, etc. The scales of charges for passengers and freight will be subject to the Minister's approval.

Helicopterist's Accident.

FROM France it is reported that de Payer has had an accident while testing a helicopter of his own design. The report states that something went wrong when the machine was at an altitude of about 200 metres. (Looks like a record for helicopters.) The machine did not drop at once but swayed about for nearly five minutes, the inventor evidently trying to right it. Finally it crashed and the inventor sustained severe injuries.

LONDON TERMINAL AERODROME

Monday Evening, October 10, 1921.

PASSENGER traffic figures have been slightly better this week, but machines are still going out and coming in at times with only two or three passengers. Messageries Aériennes, after having had only between 20 and 30 passengers a week for some time past, rose to 46 this last week, while Mr. Bouderie, of Grands Express, tells me that on his line also there is an improvement. Handley Page Transport have hardly felt the slump. They have been turning away passengers throughout the summer, and are, with few exceptions, still getting good loads.

A large indicator-map of the three continental air routes to Paris, Brussels and Amsterdam, has been erected near the Customs House on the public side of the barrier. Small models of the various "air expresses," with their correct registration marks, are moved along the different routes to show the progress of aeroplanes while in flight to and from the continent. There are still so many machines running, in spite of the fact that winter services are in operation, that it occupies the entire time of one man to keep the board up-to-date. The progress of the machines is checked by messages received from land stations, and also by wireless signals from machines fitted with the necessary installations. The map does not pretend to be geographically correct, and remarks as to its shortcomings in this respect have been numerous. This does not, however, detract in any way from the map's chief purpose, which is to indicate the movements of machines.

Mr. Shaw terminates his connection with Messrs. Basil S. Foster, Ltd., today, and is now to represent Shell-Mex interests on the aerodrome.

Aerodrome Lights Seen 32 Miles Away

ON Tuesday last Mr. Shaw flew one of the Aero Club's Avros to Stow-in-the-Wold with a passenger. On his return journey, which was made towards dusk, he picked up the aerodrome lighthouse while he was at about 2,500 feet above Wokingham, a distance of 32 miles from the aerodrome. He tells me that the lights of Surbiton and Kingston were a wonderful sight from the air, but that London was veiled by an evening mist which only the stronger arc-lights could penetrate.

I now understand that when Mr. Frank Searle opens his new air line in the spring he will have a fleet of new D.H. 32's, with 360 h.p. Rolls-Royce engines. Mr. Woods-Humphreys, who was with Handley Page Transport through the pioneer days of commercial aviation, is to be aerodrome manager of this new air-line.

The Instone Air Line are giving the D.H. 18, G-Earo, a thorough overhaul, and in the meantime the "Vimy" and the D.H. 18, G-Eawo, are carrying on the service. Mr. Barnard has been at the aerodrome on several occasions lately, but has not yet recovered completely from his motor-cycle accident.

The airship mast is now completely dismantled, and, beyond one or two piles of timber and ironwork, has practically vanished from the aerodrome.

With reference to the balloon "sniping" competition held here on September 24, between Colonel Risk and Colonel Spenser Grey, I understand my statement that the competitors had a £25 wager on the result has brought a protest from Colonel Risk, who declares that this was not the case. My information on this matter came from such a source that I never for a moment doubted its accuracy; but, at the same time, I regret it should have caused annoyance to Colonel Risk, and tender my apologies herewith.

Handley Page Developments in Paris

MR. HANDLEY PAGE and Mr. Cogni travelled to Paris on today's "H.P.," while Mr. Flowers has just returned from that city. It is evident that developments are to take place in the organisation of Handley Page Transport in Paris. Already they have instituted an improved passenger car service from Paris to the aerodrome at Le Bourget. Passenger cars have, in the past, called round at the various agencies picking up travellers on their way. Now, however, all travellers by Handley Page are picked up at the Hotel Crillon, on the Place de la Concorde, following which they drive direct to the aerodrome.

In place of the offending "C.A.T.S." on the front of their jerseys, the traffic hands have now the letters "L.T.A." (London Terminal Aerodrome), embroidered in red above their distinguishing number.

The other day a new use was found for the speed of the "air express." A Professor of the London University travelled in one of the K.L.M. monoplanes in order to deliver a lecture in Groningen that same evening.

Goods of German Origin

CAPTAIN LEVERTON is still having a great deal of trouble with goods, emanating from German sources, which come by air from Amsterdam, and are liable for the reparation duty. The senders of these parcels almost invariably omit the necessary papers, and, in consequence, goods are held up in Customs solely because of such omissions.

The Anglo-American Oil Company are installing a second petrol pump on their bulk storage tank, and I understand that this is to be worked by compressed air to save the expenditure of "boy-power" which the length of the delivery-hose necessitates.

One of the Goliaths of the Grands Express was forced to descend with propeller trouble at St. Inglevert whilst en route from Paris to Croydon on Saturday. The trouble developed just after leaving the French coast to cross the Channel, but, as the machine was at the time at a height of 4,500 feet, the pilot had no difficulty in turning and landing at St. Inglevert. Another aeroplane was dispatched from Paris to pick up the six passengers, and this machine arrived at Croydon after dusk, making quite a good landing with the aid of the aerodrome lights.

A fine week-end still brings crowds to the aerodrome, and Captain Muir was busy taking up joy-riders on Saturday and Sunday. He is, by the way, now the aerodrome is illuminated, prepared to ascend with joy-riders in the evening for a trip over London to view the wonderful spectacle that the post-War lighting of the metropolis now presents from the air.

Mr. Duke wishes me to say that he is not the inventor of the method of making three-ply for aeroplane models from Japanese veneer. The credit lies with Mr. D. Campbell of the Handley Page wind-tunnel staff.

A Plethora of Airway Uniforms

WE have quite a dazzling display of specially garbed officials just now. The latest arrival is a fireman, and his raiment consists of one of those round caps and a blue uniform, which seem peculiar to that craft. There are as a matter of fact, no fewer than six distinctive uniforms now to be seen here daily; and the police pensioners, who prevent people running away with Napier "Lion" engines as souvenirs of a visit to Croydon, have perhaps the neatest of all. Then there are the two foremen of the C.A.T.S., with a distinctive uniform derived evidently from the Post Office, while one must not forget the yachtsman's rig of the C.A.T.S. themselves. The Customs watcher also has a nautical flavour about him, and—last, but far from least—there is the gorgeous uniform of the Instone commissionaire.

Owing to the recent disastrous fire at Evere aerodrome, Brussels, in which most of the S.N.E.T.A. machines were destroyed, the London-Brussels service has been suspended temporarily. The Brussels-Paris and Brussels-Amsterdam services are, however, being maintained with the help of Messageries Aériennes and the K.L.M. Playing as they do a lone hand on the London-Brussels route, S.N.E.T.A. will not be able to fly again until new machines are available.

A Problem in "Air Express" Housing

WHEN new air transport companies open up in the spring there is certainly going to be competition for shed accommodation. Handley Page Transport occupy one half of the big shed, and the Instone Air Line the whole of the smaller shed. The "Goliaths" take up most of the second half of the big shed and, as they are too large to go into the bessoneaux, it may become somewhat of a problem where they shall be housed when—as will assuredly be the case—new British companies require the space they now occupy. There is no question of favouritism in this. The British companies, making as they do Croydon their headquarters, must have a well-lighted shed, with a concrete floor, in which they can do their overhauls. It would be practically impossible for them to make do with any canvas hangars. As there is, I understand, to be more than one new British company, this problem of shed accommodation becomes still more complicated.

Change in Posting Time

THE Postmaster-General announces that the time of departure from Toulouse of the air mail for Morocco has been revised. The latest time of posting at the General Post

Office, London, of correspondence intended for inclusion in the Moroccan air mail is now 11 p.m. on Saturdays, and 6 p.m. (5.30 p.m. for printed papers) on Mondays, Wednesdays, and Fridays.

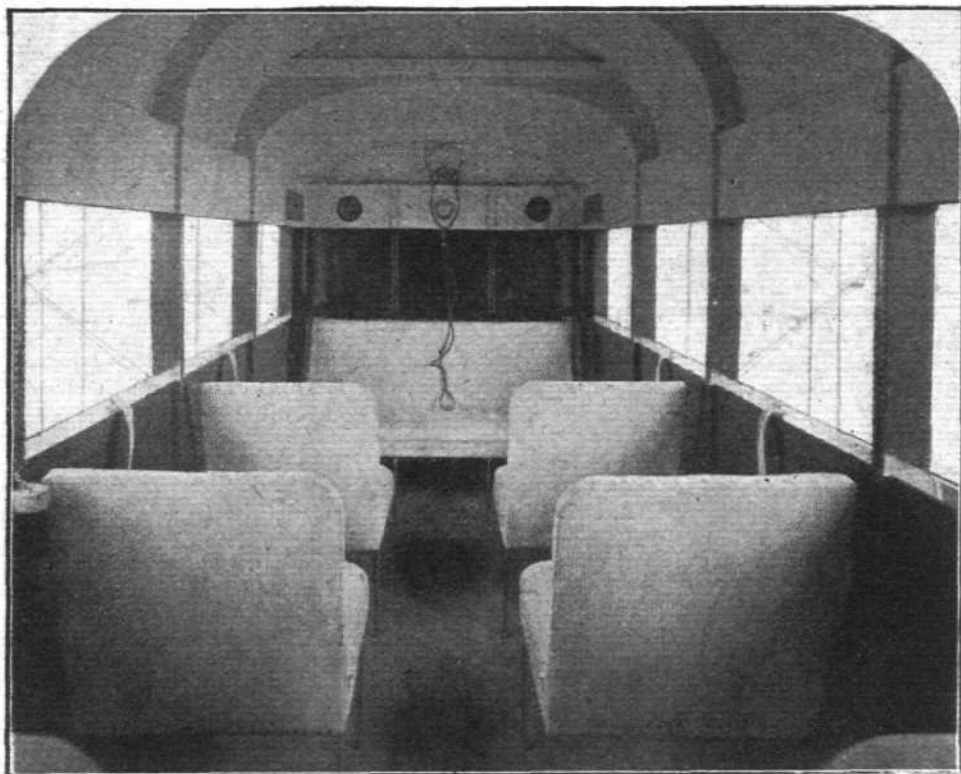
AIRISMS FROM THE FOUR WINDS

FROM Paris, the other day, a method of how not to popularise aviation was described. One day just as dusk was falling a squadron of aeroplanes circled gracefully over the capital, and from them fluttered down a veritable rain of circulars, made still more picturesque by the launching of tiny coloured parachutes and toy balloons. Whatever the public thought, the city authorities did not approve of this new form of adver-

against similar unauthorised happenings in this country.

WHEN shall we get those British Air-Mail Stamps? Glad to note that the idea so long called for in FLIGHT is at last spreading. *The Londoner*, a week or more ago, asked:

"Why don't the British authorities issue an aerial postage stamp, both as a business proposition and as a method of



The Cabin of the "Bristol" Ten-Seater: Although not including all the seats, this photograph gives an excellent idea of the roominess of the cabin and of the good view obtained through its windows. The machine, which has a 450 h.p. Napier "Lion" engine, was fully described in our issue of July 7, 1921.

tising, especially since the space in front of the Hôtel de Ville was littered thick with papers fallen from the skies. This is not the first time that aeroplanes have dropped papers over Paris, leaflets having been distributed in this manner to announce the result of the Dempsey-Carpentier fight.

And the pity of it. Thank the foresight which provided

popularising the air mails? Within the last few weeks air stamps have been issued for the Memel zone of Allied occupation in Germany, from Latvia, from Lithuania, from China, and from Syria, whilst the Portuguese colony of Macao is about to issue a special series in connection with its new air mail services." We echo: Why don't they?

"Ferry" Pilots: A group of the pilots flying machines from Croydon to Spain, photographed at the San Sebastian aerodrome, where the machines are delivered. From left to right: Messrs. Barnard, Dodd, Carter (passenger), Piercey, Broome and Hearne.





PERSONALS

Married

Capt. PHILIP GEORGE BATEMAN, London Irish Rif. and R.A.F., son of the late Dr. A. G. Bateman and of Mrs. Bateman, of 7, Queen Anne Street, W., was married on September 25 at Manastir, Sinaia, Rumania, to Mdlle. MARIE-LOUISE BLANC, eldest daughter of Mme. IRENE PROCOPIU, lady-in-waiting to the Queen of Rumania, and of the late M. LOUIS BLANC. The Queen of Rumania, with Princess Marie and Princess Helen of Rumania (the former of whom, according to Rumanian custom, gave away the bride), was present.

JOHN HENRY PAULET DAMAN (late Capt. R.A.F.), of Ipswich, second son of the late Rev. Henry Daman, of Eton, and Mrs. Daman, was married on September 10 at Christ Church, Wanstead, to ANNETTE ROSE RYDER CLARK, only daughter of Mr. and Mrs. F. Hammond Clark, of Wanstead, Essex.

Flight-Lieut. DAVID S. DON, R.A.F., was married on September 23, at the Roman Catholic Cathedral, Bombay, to MARY MONICA MACDERMOTT.

Flying Officer CHARLES PRIDDEN HASLEGRAVE, R.A.F., only son of Mr. and Mrs. F. Haslegrave, of 294A, Earl's Court Road, S.W. 5, was married on September 3, at Christ Church, Lancaster Gate, to ALMA, only child of the late RICHARD ALLEN and Mrs. ALLEN, of Eastbourne. F.M.S. papers, please copy.

Flying Officer PHILIP HERBERT MACKWORTH, D.F.C., son of Mrs. Audley Mackworth, of Caterham Valley, was married on October 4, at St. John's Church, Caterham Valley, to WINIFRED KATHLEEN JUNE MOSS, daughter of Mrs. Moss, of Golders Green.

Capt. ROLAND F. H. NORMAN (late Leicestershire Regt. and R.A.F.) was married on September 28, at St. George's Church, Hanover Square, to Mrs. WILLIAMS-BULKELEY, widow of Major R. G. W. Williams-Bulkeley, M.C., Welsh Guards, and daughter of Col. the Hon. Sir HENRY and Lady LEGGE.

COLIN WARD SILVESTER, R.A.F., younger son of Mr. and Mrs. J. H. CHALMERS, 4, Cavendish Place, Bath, was married on September 27, at Camberley, to AUDREY KATE MERVYN, elder daughter of Mr. and Mrs. MERVYN VOULES, Cordwalles, Camberley.

Major C. H. STRINGER, D.F.C., late 5th R.I. Lancers, was married to LORIE BARONESS OMPSTEDA on September 7, at the British Embassy Church, Paris.

To be Married.

The engagement is announced between Flight-Lieut. H. H. BALFOUR, M.C., younger son of Lieut.-Col. Nigel H. Balfour, O.B.E., and Mrs. Nigel H. Balfour, Belton, Camberley, and DIANA BLANCHE, second daughter of Sir Robert and the Hon. Lady HARVEY, Langley Park, Slough.

Item

Capt. J. LEGUIA, D.F.C., Commander in the Peruvian Flying Corps, whose station at Lima he established, is now in town. During the War Captain Leguia, as a member of the R.F.C., greatly distinguished himself, and for his gallant services was decorated by His Majesty the King. During his recent sojourn in his own country Captain Leguia flew 7,000 miles.

CORRESPONDENCE

The Editor does not hold himself responsible for opinions expressed by correspondents. The names and addresses of the writers, not necessarily for publication, must in all cases accompany letters intended for insertion in these columns.

HIGH-SPEED AIR CONTESTS AND ACCIDENTS

[2045] Discussing with the distinguished young French parachutist, who has made the greatest number of drops in France, the probabilities of accidents occurring in the race for the Deutsch de la Meurthe Aerial Cup, I enquired what effect a fatal catastrophe to M. Sadi Lecointe would produce upon the attitude of the French air authorities to the compulsory employment of reliable aerial life-saving appliances in contests where engines, wings and all materials have to be stressed to the achievable limit. A smile was the only reply. This was on Thursday, September 29, two days before the race.

I do not claim any powers of clairvoyance, other than the capability of judging that if any machine went down, it would probably be that of M. Sadi Lecointe, who, in his endeavours to get its utmost achievable speed, would probably sail along the edge of and possibly exceed the limit of its elasticity, as every really great aviator did in the War. And that is where the personal equation of "luck" was accustomed to jump in. His notable good luck alone has prevailed now, and most fortunately M. Sadi Lecointe, although severely hurt, was not killed; so the life of this most illustrious of living French aviators has been preserved, as yet, to the French nation. But for how long? Sooner or later, this daring sportsman of the air will be killed; for all the most daring aviators end the same way—in a fatal crash—and all for want of being able to jump away into the air from a broken or burning machine. The scientific parachute, with its 100 per cent. efficiency in action, is at their disposal, and if the great air authorities made its use compulsory in these dangerous speed contests, the additional weight of about 25 lbs., all told, would handicap none of the competitors, and the obligation to carry an aerial life-saver would be of inestimable moral value in the lessening of nerve strain to each one alike.

M. de Romanet was killed in the preliminary trials for this Cup; and in our Aerial Derby trials, Capt. Proctor, V.C., and Mr. Hawker were both killed—the latter probably on account of his weakened physical condition, but, even so, the parachute might have given him a fighting chance of his life. The other two could undoubtedly have been saved. Take the trouble to examine the list of fatal crashes of great airmen

during only the last twelve months, and, from the details given, it will be seen that nearly all of these deaths were avoidable. No nation—English, French or American—can afford to lose its best pilots in this senseless way. And what are these various air authorities doing? *Nothing*—for any sign they make to the contrary.

All who know anything more than the mere outside of these high-speed contests realise the considerable danger that all who fly in them have to face. The pilots themselves—although no one knows the danger better than themselves, and the strain it is to their nerves—make light of it, and speak contemptuously of parachutes (which, by the way, few have had any opportunity of trying), but in their hearts many would welcome their compulsory addition to their machines. The first lives saved in preliminary high-speed trials and in the contests themselves would put the final extinguisher on all controversy. Let a beginning be made with these, who are some of the best of our men.

All crashes and deaths, wheresoever they occur, harm the cause of civil aviation, and keep the business-man out of it. Two or three times a week he sees that somewhere or other pilots and passengers have been killed. That is sufficient for him. The newspapers, anxious to help civil aviation, either omit these occurrences altogether, or hide them away in insignificant paragraphs. The press would do better service to aviation generally by insisting that the time has arrived to stop these avoidable deaths, and to make the carrying of approved aerial life-saving appliances compulsory on all aircraft, as the provision of lifeboats and lifebelts is on all ships. It *must* come, and now is the time to begin, when the design of all aircraft is still in a condition of flux. Aircraft and their convenable life-saving gear ought to progress together, as they are complementary each to the other. To what splendid efficiency all that appertains to life-saving at sea has arrived, those who visited the Shipping Exhibition, just ended at Olympia, can judge for themselves. But standing still and doing nothing, as the Air Ministry is, is not the way to arrive at efficiency in life-saving in the air. The Air Ministry say they have no money for the purpose. What do our legislators say to this?

E. R. CALTHROP, M.Inst.C.E., M.I.Mech.E.

AEROPLANES IN TROPICAL COUNTRIES

UNDER the above title a very interesting paper was read before the Royal Aeronautical Society on October 6 by Air-Commodore Brooke-Popham, Director of Research. The conclusions reached by the D. of R. were based upon observations and experience in Egypt and Mesopotamia. His general impression, the lecturer said, was that Mesopotamia was very nearly as much worse than Egypt, as regards climatic conditions, as Egypt is worse than England. The lecturer said that the chief troubles with aeroplanes in the East could be divided under the following headings: Timber shrinkage, Propellers, Tyres, Shock-absorbers, Petrol supply, and Hangars.

With regard to timber shrinkage, the Air-Commodore said he felt that this was a nuisance, but not a danger. The timber undoubtedly shrinks when it arrives in Egypt or at Baghdad. In the case of Egypt a limit is reached in about two months, and there is no evidence that the timber swells again during the cold weather. Apart from the drastic solution of sending out the components and building the machines in the country, the lecturer said he thought that, provided certain precautions were taken by the manufacturers, there should be no great difficulty in overcoming the troubles. Metal fittings, especially where they clip completely around a wood member, should be adjustable, and it is also advisable to send out the wings in an uncovered condition, as often the fabric has to be stripped off on arrival in order to tighten up the various wing fittings. So long as a machine is to fly merely in Egypt or Mesopotamia the lecturer thinks there is no necessity for all-metal construction, but he still believes that when machines fly constantly between London and Bombay it will be necessary to do away with wood in their structure. With regard to three-ply wood, the lecturer said that thin three-ply is inclined to blister and to come apart in the laminations. Thicker three-ply stands up fairly well, but causes a certain amount of trouble on new machines owing to shrinkage.

The trouble with propellers is due to two causes. Firstly, they have a tendency to split along the laminations or else actually cracking through the timber, generally at the boss. The difficulty can probably be overcome by using propellers having a slightly higher factor of safety than is necessary for England. The second source of trouble is damage to the leading edge by small stones or scrub. The remedy for this is obviously metal covering, but the metal must be strong, as thin brass quickly wears through. Also the metal strip should extend the whole length of the blade and not be confined to the tip. Metal propellers would afford a complete solution, but the lecturer sees no reason why wood propellers should be condemned, and thinks great improvement would be found if propellers were manufactured locally.

The difficulty with tyres seems to be deterioration of the tyre itself and of the valve, and punctures. The latter are caused by camel thorns, and can be eliminated only by a definitely puncture-proof tyre, such as the Rapson car tyre. This is, however, too heavy for aeroplanes. In the opinion of the lecturer, the right solution is to do away with the need for pneumatic tyres by improvements to the undercarriage. The valve trouble can probably be overcome by the use of all-metal valves, experiments with which are being carried out.

As regards rubber shock absorbers, these suffer to the same extent as tyres, and although a substitute, such as coiled wire, can be used, the lecturer said that here again he thought what was really wanted for work in the East was a form of under-

carriage which would do away with both pneumatic tyres and rubber shock absorbers.

On the question of petrol wastage, the lecturer pointed out that this seems to be chiefly due to the containers in use being too fragile, those containing 4 gallons being much weaker than the 2-gallon tin used in England. They should be of stout construction, and the screw stopper should be fitted with a really suitable washer. For preference it should also be covered with a soldered cap, just firm enough to be airtight, otherwise mechanics are apt to damage the tin in taking off the cap.

Hangars are another heavy source of expense, as the canvas covers are practically useless after one hot season. Experiments have been tried with regard to placing corrugated iron on the Bessoneau frameworks, and this seems to be quite successful, provided the framework is not pierced by bolts and nails.

The fabric on aeroplanes used to give trouble, but now this problem appears to have been solved by the use of the coloured varnish known as P.C. 12 in conjunction with the aluminium varnish known as V. 84 on top.

Tail skids wear badly, and the most effective remedy is to fit detachable shoes of hard steel. Tail trimming gears are apt to suffer from the effect of dust. Inspection holes should be provided with covers.

Concerning engines, the Air-Commodore said: "I could not find any trouble specially due to the climate, either in Egypt or Mesopotamia. Of course, for most machines an additional radiating surface is necessary; for instance, on the D.H. 9a the size of the standard radiator is 6.65 sq. ft., and an auxiliary radiator has to be fitted, having an area of 2.5 sq. ft. On the Bristol Fighter the standard sizes are 4.1 and 1.54 respectively. Fitting an auxiliary radiator is much preferable to merely enlarging the size of the standard radiator, because in the cold weather the radiating surface is too large with the extra radiator, and the latter can then be taken off, thus reducing the head resistance.

"There are one or two points about packing. First as regards engines, it seems very hard to prevent these getting rusty on their way out. It is no good, of course, trying to send out engines installed in the fuselage, at any rate in the case of tractor machines, partly because the fuselage is apt to get damaged, and also because it is very difficult to get a large case airtight. I believe engines going out to the East ought to be packed in a special dry room, so that the air that is actually enclosed inside the tin-lined and soldered case will not contain any moisture that might cause damage. One other point. Machines are generally sent out without their wheels, and in some cases a shock absorber is wound on the axle and machines sent out with it on. This is a mistake, as the machine is apt to get dragged along on the floor of the packing case, and so the shock absorber gets practically ruined and has to be replaced."

The lecturer then gave a most interesting description of the reasons for and the nature of the new cross-desert route from Cairo to Baghdad. To any manufacturer or potential user of the new air route, the Air-Commodore's remarks on this are of the greatest interest, but as, unfortunately, we cannot devote the space necessary to give this part of the paper in full, we would advise all interested to get a copy of the paper, or the copy of the Society's journal containing it, so as to have the benefit of a verbatim report. In years to come the route cannot fail to become one of tremendous importance, and the paper gives an excellent account of the route as it exists today.

P. & O. Revised Sailings Nullify Air-Post Saving

THE Postmaster-General announces that, in consequence of an alteration in the times of departure of the Peninsular and Oriental and Orient Packets from Marseilles and Toulon respectively, it will no longer be possible to post letters for India, Egypt, etc., and, in some weeks, Australia, by Air Mail to Paris on Friday with a view to overtaking the ordinary mail for those countries, which is closed in London on the previous evening. Since May 1 last, this connection has been missed on only one occasion. It was duly secured in the case of the mails for India, etc., which were despatched from London to Paris by air on Friday last, and these have been forwarded from Marseilles by the Peninsular and Oriental Packet "China."

The Coupe Michelin

SEVERAL attempts have been made by French and Italian pilots to improve upon the performance of M. Poiree on a Caudron C. 60. Pelletier d'Oisy made a try, but had

to give up at Toulouse. In Italy the conditions are more or less the same, except that Italian pilots are at liberty to choose a sea circuit for their attempt if they prefer.

The following attempts have been made by Italian competitors: Col. Armani on a B.R. had to give up after covering a little over half the total distance of 3,000 kilometres. Capt. Diziano crashed on Mount Gandino. Capt. Martinetti it appears has succeeded in completing the course, and, subject to homologation by the French Aero Club, he seems to have improved upon Poiree's performance, having covered the 3,000 kilometres in 35 hours, while Poiree took 37 h. 23 mins. Next!

Another! But it's not Aviation

In attempting to leap from a motor-car travelling at a high speed to an aeroplane flying close overhead, a young woman named Madeline Davis was killed at Long Beach on October 4. Miss Davis, who it is stated was an extremely pretty girl of 23, known as "the girl daredevil," was rehearsing the feat for a cinema play.

THE ROYAL AIR FORCE

London Gazette, October 4

Permanent Commissions

Flight Lieut. W. V. Simmons is granted a permanent commn. as a Flying Officer; Nov. 28, 1919. He will be placed at the head of the list of Flying Officers, and will retain his seniority relative to other officers similarly reduced in rank on the grant of permanent or short service commns. in accordance with his previous position on the graduation list. (*Gazette*, Nov. 28, 1919, appointing this officer to a short service commn., is cancelled.) Sqdn. Leader E. V. S. Wilberforce, A.F.C., resigns his commn., and is granted the rank of Lt.-Col.; Sept. 13. Flight Lieut. R. G. Mack is placed on the Retired List on account of ill-health contracted in the Service; Feb. 19 (substituted for *Gazette*, March 1).

Stores Branch

Flying Officer (acting Sqdn. Leader) W. H. Holroyd (Capt., R.A.P.C.) is granted a permanent commn., for accountant duties, as a Flight Lieut.; Aug. 13. The seniority of all officers granted commns. in the Stores Branch for accountant duties is provisional only. The final seniority list of all such officers will be promulgated when the establishment is completed. Flight Lieut. W. H. Holroyd to be Actg. Sqdn. Leader; Aug. 13.

Medical Branch

Group Capt. N. J. Roche, O.B.E. (Surgn. Comdr., R.N.), is granted a permanent commn. in the rank stated, with effect from, and with seniority of, Jan. 1.

Short Service Commissions

The following are granted short service commns. as Flying Officers, with effect from, and with seniority of, the dates indicated:—C. F. Embleton; Sept. 26. S. W. Smith; Sept. 26. T. N. Stack; September 21.

Observr. Officer A. M. Anderson, D.F.C., resigns his commn.; Oct. 5. Flight Lieut. G. E. Wilson to take rank and prec. as though his appointment as Flight Lieut. bore date Jan. 1, immediately following Flight Lieut. F. N. Hudson, M.C.

Flying Branch

Sec. Lieut. (Hon. Capt.) P. E. Bishop to be Lieut., and Hon. Capt.; Oct. 16, 1918. Lieut. (Hon. Capt.) P. E. Bishop is transferred to Unemployed List; Dec. 7, 1920 (substituted for *Gazette*, Dec. 14, 1920).

Administrative Branch

Sec. Lieut. J. D. Grant (late General List, R.F.C., on probn.) is confirmed in his rank as Sec. Lieut.; Jan. 8, 1919. Sec. Lieut. J. D. Grant to be Lieut.; June 6, 1919. Lieut. J. D. Grant is transferred to Unemployed List; Sept. 2, 1919 (substituted for *Gazette*, Nov. 11, 1919). Lieut. A. J. Burge relinquishes his temp. commn. on ceasing to be employed, and is permitted to retain his rank; Sept. 19.

Stores Branch

The temp. commn. of following Flying Officer on probn. is terminated on cessation of duty:—E. F. Carrall; Sept. 21.

Memoranda

One Cadet is granted an hon. commn. as Sec. Lieut., with effect from date of his demobilisation.

One Cadet is granted an hon. commn. as Sec. Lieut., with effect from date of his demobilisation, and relinquishes his commn. on joining the Army, with effect from July 9.

London Gazette, October 7

Short Service Commissions

Flying Offr. H. H. French is removed from the R.A.F.; Sept. 29.

Technical Branch

Gazette Sept. 20 concerning Sec. Lieut. (Hon. Lieut.) F. McGuffie is cancelled. *Gazette* Oct. 15, 1920, stands.

Memoranda

Two Cadets are granted honorary commns. as Sec. Lieuts., with effect from the dates of their demobilisation.

ROYAL AIR FORCE INTELLIGENCE

Appointments.—The following appointments in the Royal Air Force are notified:—

Flight-Lieutenants.—E. M. Pollard, from R.A.F. (Cadet) College (Flying Wing), Cranwell, to R.A.F. Depôt (Inland Area) (Supernumerary, Non-effective). Injured and admitted to R.A.F. Central Hospital. 1.9.21. R. J. Monahan, M.D., from No. 5 Flying Training School (Inland Area), to R.A.F. Depôt (Inland Area). 20.9.21. H. W. G. Jones, M.C., from R.A.F. Depôt (Inland Area), to No. 28 Squadron (India). 17.9.21. F. J. Powell, M.C., from Boys' Wing (Cranwell), to No. 28 Squadron (India). 17.9.21. E. R. Bastard, from R.A.F. Depôt (Inland Area), to No. 5 Flying Training School (Inland Area). 17.9.21. C. E. H. Medhurst, O.B.E., M.C., to Inland Area Aircraft Depôt (Inland Area), on ceasing to be attached to School of Military Administration. 13.8.21. D. W. King, to School of Technical Training (Men) (Inland Area), on ceasing to be attached to School of Military Administration. 13.8.21. J. Kyle, from Headquarters (Middle East Area), to S.M.O. Egyptian Group (Middle East Area), for duty at R.A.F. Station, Helwan. 5.1.21.

Wing-Commanders.—J. H. A. Landon, D.S.O., O.B.E., from Air Ministry (D. of R.), to command School of Technical Training (Men) (Inland Area). 6.10.21. W. H. Primrose, D.F.C., from School of Technical Training (Men) (Inland Area), to command No. 6 Flying Training School (Inland Area). 6.10.21.

Squadron-Leaders.—G. Blatherwick, from No. 1 Flying Training School (Inland Area), to Central Flying School (Inland Area), for course in Practical Engineering. 15.9.21. L. D. D. McKean, from Coastal Area Aircraft Depôt (Coastal Area), to command No. 203 Squadron (Coastal Area). 1.10.21. R. M. Bayley, D.F.C., from No. 203 Squadron (Coastal Area), to command R.A.F. Base (No. 205 Squadron) (Coastal Area). 1.10.21. G. W. Roberts, M.C., from R.A.F. Depôt (Inland Area), to Air Ministry (D.G.S.R.). 6.10.21. T. B. Meyer, from Headquarters, Middle East Area, to R.A.F. Depôt (Inland Area) (Supernumerary). 6.10.21.

28th Squadron, R.F.C. and R.A.F.

A VERY successful Second Reunion Dinner was held at Anderton's Hotel, London, on October 1. The First Reunion Dinner was held in September last year, whilst a successful mid-year Bohemian Concert was organised in April last.

An effort is being made further to establish the traditions of the Squadron, and it has been decided to broaden the activities of the 28th Squadron Old Boys' Association, which has been responsible for the two later functions. In addition to the mid-year event in the spring and the Third Annual in the autumn of 1922, the Committee will remain available for such mutual help as will be practicable. All the members present on October 1 have subscribed the sum of a half-crown as an annual subscription, and a circular is being sent out to all past members of the Squadron whose addresses are known, requesting the transmission of the said subscription, so that the Association may be enabled to bring into effect the declared wishes of the Old Boys.

It is hopefully expected that the members of the existing 28th Squadron, stationed in India, will join the Association and keep in touch with those who founded and maintained the fine traditions of 1915-1918. All communications should be addressed to the Hon. Secretary, Mr. C. Hodges, at 102, Camden Street, London, N.W. 1.

At the last dinner the co-operative spirit at all times exhibited by the officers of the Squadron was re-emphasised. Two of the War-time Flight-Commanders and one of the Adjutants attended, together with the President, and it was with deep regret that Wing-Commander Joubert was prevented from attending by illness.

As a mark of appreciation the members decided to invite all past and present officers of the Squadron to accept the position of Vice-President, as an extension of the system inaugurated last year, and there is no doubt but that the list will presently be an imposing one, remembering the number of officers who have remained in touch with the movement and have attended various of the functions.

All officers concerned are urged to accept this as a personal invitation, and to communicate with the President, Lieut. S. Yates, at 35, Baalbec Road, London, N. 5, without delay.

Periodical communications will be issued by the Committee to Members and Vice-Presidents of the Association direct.

Disbandment of R.A.F. Airship Base, Howden

An order has been issued that the Royal Air Force Airship Base, Howden, Yorks, is to be closed down not later than March 31 next. This order is in conformity with the policy already announced of ceasing all further activities with airships for Service purposes, owing to the necessity for the utmost economy, and making existing airships available for civil operation. The airship personnel is being transferred to other branches of the Royal Air Force, and a number of officers from Howden have already commenced courses of instruction in order to fit themselves for new duties. A certain number of civilian subordinates are to be engaged at Howden for employment as carpenters, packers and labourers, with a view to releasing Air Force personnel at an early date for service elsewhere.

Relinquishment of R.A.F. Station, Stonehenge

THE land and buildings comprising the R.A.F. station at Stonehenge have been passed to the Disposal and Liquidation Commission, for disposal.

Reorganisation of R.A.F. Base, Leuchars

THE Royal Air Force Base at Leuchars (Fifeshire), from which R.A.F. personnel and aircraft are supplied to the Fleet, has been reorganised recently. The squadrons based there in future will be Nos. 205 and 3, No. 203 Squadron remaining until, at a later date, it is moved to Donibristle (North of Edinburgh). The squadrons stationed at Leuchars specialise in flying operations with the Fleet. Pilots are trained in the use of different types of aircraft and carry out exercises with units of the Atlantic Fleet as required, either from a shore-base or from aircraft-carriers. At present a detachment from Leuchars, operating at Delny, near Invergordon, is co-operating with the Atlantic fleet in its autumn firing practices. This work consists in reconnaissance exercises and in "spotting" for the ships at distances up to 30 to 40 miles from land.

